

Cobbe (Frances P.)

ILLUSTRATIONS
OF
VIVISECTION;
OR,
EXPERIMENTS ON LIVING ANIMALS,
FROM THE WORKS OF
PHYSIOLOGISTS,
NAMELY,

LEÇONS DE PHYSIOLOGIE OPERATOIRE (OPERATIVE PHYSIOLOGY).

By CLAUDE BERNARD.

LEÇONS SUR LA CHALEUR ANIMALE. By CLAUDE BERNARD.

LA PRESSION BAROMÉTRIQUE. By PAUL BERT, Paris, 1873.

AS REPRODUCED IN

“BERNARD’S MARTYRS” AND “LIGHT IN DARK PLACES.”

By MISS FRANCES POWER COBBE.



PHILADELPHIA:
AMERICAN SOCIETY FOR THE RESTRICTION OF VIVISECTION,
No. 1706 CHESTNUT STREET.
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DO NOT REFUSE TO LOOK AT THESE PICTURES.

IF YOU CANNOT BEAR TO LOOK AT THEM, WHAT MUST THE
SUFFERING BE TO THE ANIMALS WHO UNDERGO
THE CRUELITIES THEY REPRESENT?

"These animals are entirely at our mercy. They are dumb and powerless to resist. There is no kind of brutality that we cannot, at our pleasure, inflict upon them." Then, how base is it to take advantage of their unprotected condition, and torture them in such a manner. Is not the idea repulsive to every generous mind?

"Better I or my friend should die," says Professor Henry J. Bigelow, "than protract existence through accumulated years of torture upon animals whose exquisite suffering we cannot fail to infer, even though they may have neither voice nor feature to express it."

FROM

BERNARD'S MARTYRS.

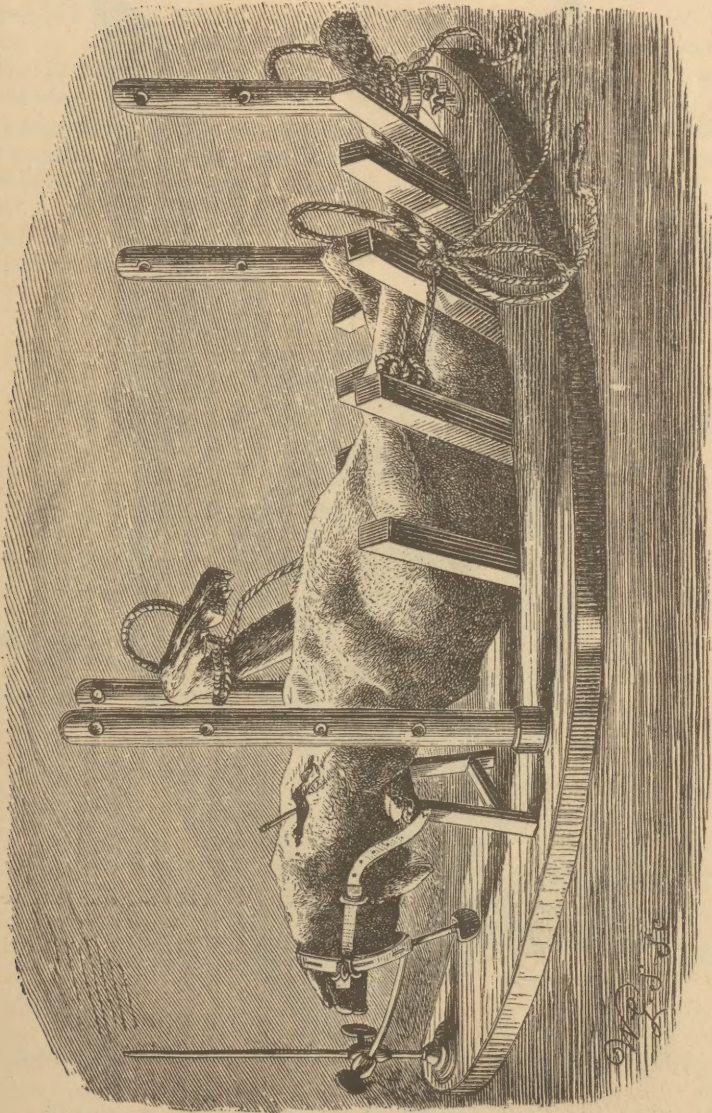
A COMMENT ON CLAUDE BERNARD'S *PHYSIOLOGIE OPERATOIRE*.

"This book will, it is hoped, convey to all its readers the fact which the opponents of vivisection have long been laboring to convey, namely: that the practice, as it now exists, is very seldom the occasional resource of the practical surgeon, or even of the puzzled physiologist (like Sir Charles Bell), who desires to solve once in a way some knotty and important problem by a most carefully prepared experiment never to be needlessly repeated. It is, on the contrary, a *profession*—a regular and independent *business*—to which men devote themselves with ardor and ambition, and pursue in as orderly a manner, week after week and year after year, as any other trade, till many of them might boast that they have slaughtered more animals than the most experienced butcher in the shambles. Modern vivisection may be defined, in short, to be the limitless invention, performance and repetition, by scores of inquirers, of every kind and sort of operation on every portion of the living frames of animals, and pre-eminently of the most sensitive animals. Brains, nerves, eyes, hearts, veins, intestines, bones, limbs and skin—nothing escapes, and no part fails to afford a practically boundless field for the ingenuity of the physiologist; or if the imagination of one ever flags, it is soon stimulated into double activity to disprove the boasted discoveries of another."

"We stand, in truth, face to face with a new vice—new, at least, in its vast modern development, and the passion wherewith it is pursued—the Vice of Scientific Cruelty. It is not the old vice of *cruelty for cruelty's sake*; of that even the worst physiologist may probably be acquitted. It is, in strict ethical definition, the *fault* of indifference to a great moral consideration (namely, that of the sufferings caused by our actions) raised to the rank of a vice by the enormous extent to which it is carried. The Vivisector *ought* to be stopped in pursuing his (otherwise) lawful end of advancing physiological science, by the consideration that his means of advancing it involve a moral offence, (theologically viewed the *sin*) of causing torture worse than death to guiltless creatures. This consideration, as has been said, *ought* to stop him, just as any other man ought to be stopped in pursuing any legitimate end (*e. g.*, the advancement of the interests of his country or family), if he find he cannot carry it out without employing immoral means, deceit, robbery, persecution, treachery or any other unrighteous mode of action."

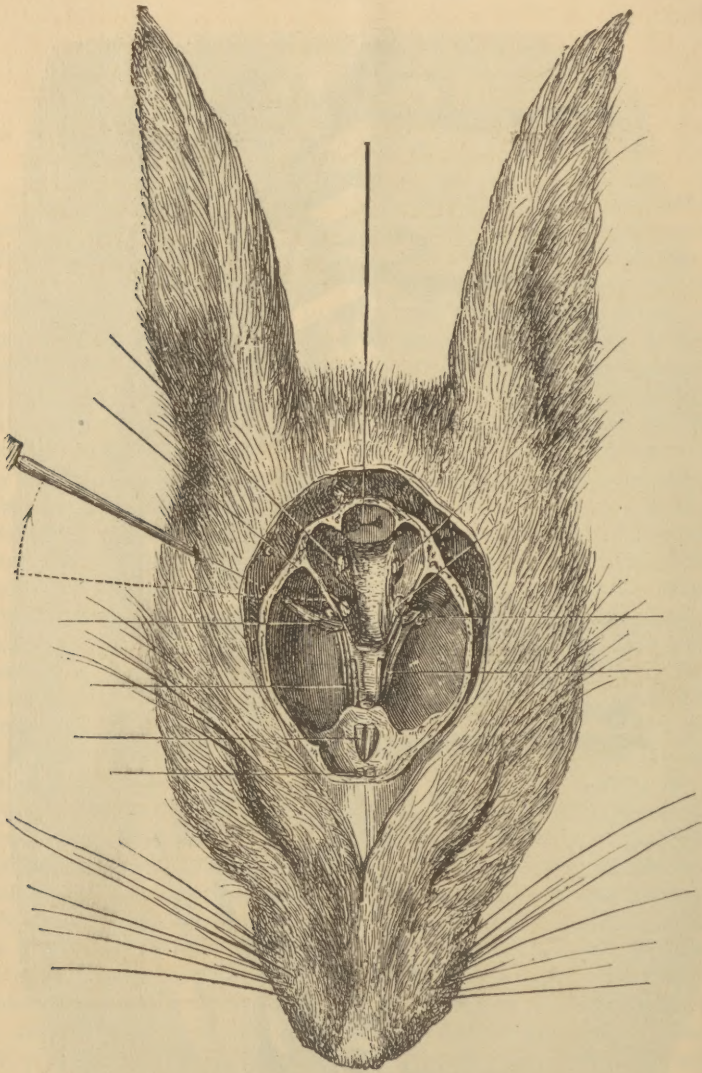
Frances Power Cobbe.

"That the dominion of man over the lower world is a moral trust, is a proposition which no man living can deny."—LORD ERSKINE.



From *La Pression Barométrique*, by Paul Bert.

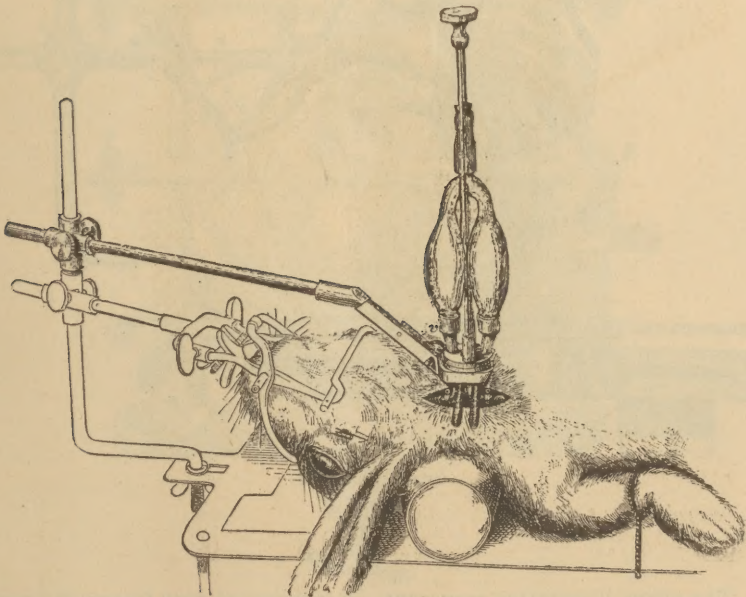
"I cannot refrain from expressing my horror at the amount of torture Dr. Brachet inflicted. I hardly think knowledge is worth having at such a purchase."—JOHN ELLIOTSON, M.D., F.R.S.



From Cyon's *Atlas*.

This illustration represents the head of a rabbit, of which the top of the skull is removed to show the position of the nerves, and the

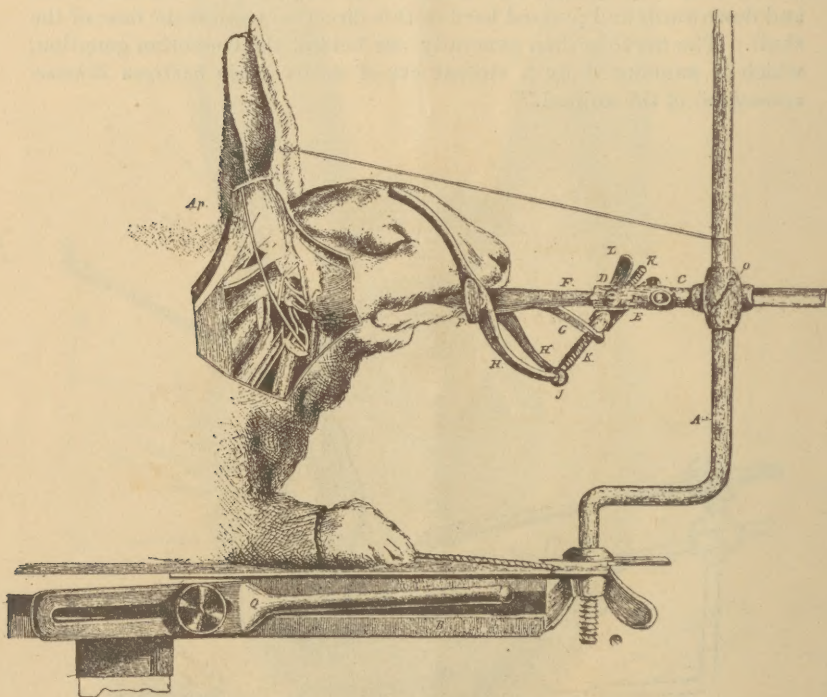
instrument is exhibited piercing the head and reaching the nerve (the trigeminus) on which it is desired to operate. The description given by Cyon of the method of operation (*Methodik*, p. 510) is as follows: "The rabbit is firmly fastened to the ordinary vivisection table by means of Czermak's holder. Then the rabbit's head is held by the left hand, so that the thumb of that hand rests on the condyle of the lower jaw. This is used as a *point d'appui* for the insertion of the knife. . . . To reach the hollow of the temple the instrument must be guided forward and upward, thus avoiding the hard portion of the temporal bone, and leading the knife directly into the cranial cavity. . . . The trigeminus then comes under the knife. Now holding the head of the animal very firmly, the blade of the knife is directed backwards and downwards and pressed hard in this direction against the base of the skull. The nerve is then generally cut behind the Gasserian ganglion, which is announced by a violent cry of agony (*einen heftigen Schmerzensschrei*) of the animal."



CYON. TABLE XXII.

Ludwig's machine for measuring the rate of the blood-current in arteries of rabbits.

“For my own part, I cannot believe that Providence should intend that the secrets of nature are to be discovered by means of cruelty, and I am sure that those who are guilty of protracted cruelties do not possess minds capable of appreciating the laws of nature. Experiments have never been the means of discovery, and a survey of what has been attempted of late years in physiology will prove that the opening of living animals has done more to perpetuate error than to confirm the just views taken from the study of anatomy and the natural motions.”—
SIR CHARLES BELL, F.R.C.S.

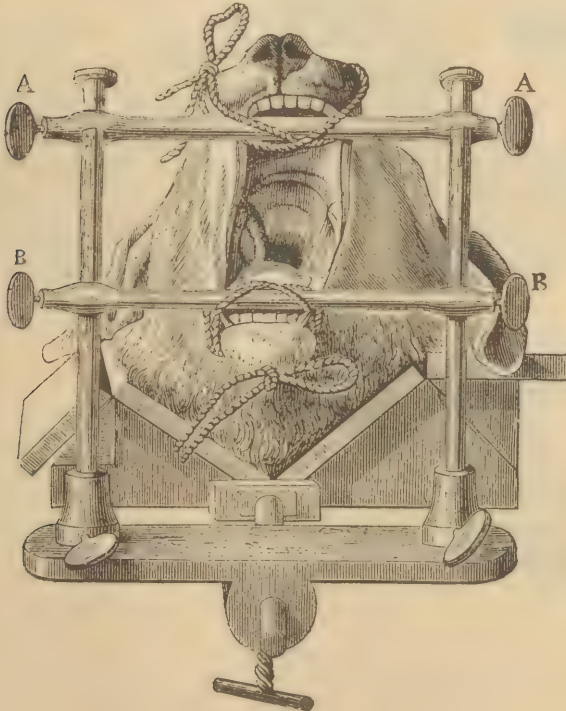


CYON. TABLE VII.

The above illustration represents an instrument very frequently mentioned in these works: Czermak's Rabbit-holder, with the rabbit's head fixed in it, and the nerves of the neck dissected out. This illustration, as well as several subsequent ones, is taken from M. de Cyon's splendid volume, the *Methodik der physiologischen experimente und vivisectionen*, with Atlas (Giessen, St. Petersburg, 1876).

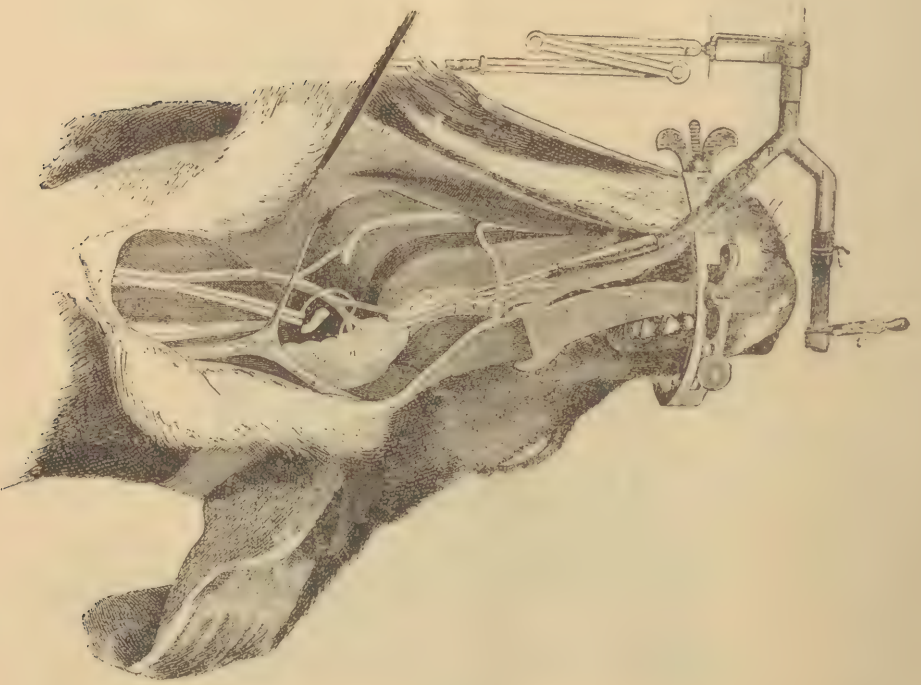
"How few facts of immediate considerable value to our race have of late years been extorted from the dreadful sufferings of dumb animals, the cold-blooded cruelties now more and more practised under the authority of Science!

"The reaction which follows every excess will in time bear indignantly upon this. Until then, it is dreadful to think how many poor animals will be subjected to excruciating agony, as one medical college after another becomes penetrated with the idea that vivisection is a part of modern teaching, and that, to hold way with other institutions, they, too, must have their vivisector, their mutilated dogs, their Guinea-pigs, their rabbits, their chamber of torture and of horrors to advertise as a laboratory."—HENRY J. BIGELOW, M. D., Professor of Surgery in Harvard College.



From Bernard's *Physiologie Operatoire*, p. 137.

Lawson Tait, one of the most eminent living surgeons, says in an address: "In 1872 or 1873 I was the witness of an experiment which thrilled me with horror, which I have never related in detail, and concerning the sight of which I shall preserve silence. I am, however, bound to say that I left the room with the feeling that if such things were to be done in the pursuit of science, I should like to part company with her."



"M. de Cyon in his article in the *Contemporary Review*, April, 1883, mentions this drawing (which was one of those exhibited life-size on the hoardings of London in 1877), and asserts that it was drawn from the dead body of the animal. It may be possible that the actual dog from

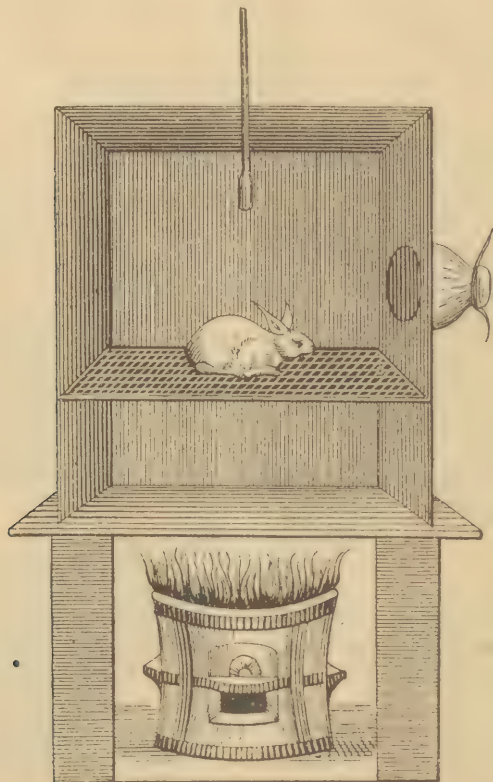
which M. de Cyon made his sketch was at that moment no longer living, but that the hideous mutilations exhibited in the drawing had been inflicted while he was still living is proved by two circumstances: one by the presence of the elaborate muzzle, which assuredly no one would have placed on the corpse of a dog, and secondly, by the presence of the cannula fixed into the duct of the salivary gland,—a gland which, of course, like any other, ceases to secrete at death, and into which, therefore, it is absurd to suppose a cannula would have been inserted after death. M. de Cyon's assertion that the dog represented is a dead one is also thoroughly disposed of by an extract from his own book quoted in an excellent letter by Mr. Ernest Bell, published in the *Spectator*, April 7th, 1883. Speaking of the plates in M. Cyon's work—

“When he tells us that these plates are, ‘of course, drawn from the dead body of the animals,’ he probably is speaking the literal truth as regards the plates, but in as far as he wishes us to infer that the operations they represent were done on the dead body, he is saying what his books show to be untrue. For, concerning one of the plates (No. xv), I find on p. 264 of the work the following paragraph:—

“‘If the experiment is made only for demonstration, one can drug the animal beforehand with chloral, chloroform, or curari; and if the last-named poison is applied, artificial respiration must be used. If, on the other hand, one wishes to use the experiment for purposes of observation, particularly if the investigation concerns the influence of the circulation on the activity of the glands, it is better to avoid these drugs, on account of their influence on the circulation. One should choose for the experiment strong, lively animals, which have been well-fed for a few days previously.’”

“It is said that the use of anæsthetics is the means of preventing these kinds of operations (experiments on the brains of monkeys, by David Ferrier) from causing pain. Although in the first instance an animal may be under the influence of anæsthetics, you cannot keep up a protracted comatose condition for days, or weeks, or months, and therefore it is perfectly idle to suggest that the horror of the operations is at all diminished.”—SPEECH OF THE HON. R. T. REID, IN THE HOUSE OF COMMONS, APRIL, 1883.

“Vivisection has proved useless and misleading, and, in the interests of true science, its employment should be stopped, so that the energy and skill of scientific investigators should be directed into better and safer channels. I hail with satisfaction the rousing which is evident in the public mind upon this question, and I feel confident that before long the alteration of opinion, which I have had to confess in my own case, will spread widely amongst the members of my useful profession.”—
LAWSON TAIT, F.R.C.S.



We now come to an illustration which will be recognized by many readers—the first of the two stoves invented and used by Claude Bernard. It is taken from his *Leçons sur la Chaleur Animale*, Paris, 1876, p. 347, and represents, as Bernard states, his “first apparatus for the study of the Mechanism of Death by Heat.” Of the results of experiments made with it he prints several tables. These tables show how dogs, pigeons and rabbits baked in the stove, expired at the temperatures of 90° or 100° Cent. in 6 minutes, 10 minutes, 24 minutes, etc., and at higher temperatures at different intervals; and again how, when,

the apparatus formed a hot bath (*i.e.*, the animal was boiled instead of baked alive), a different scale of heat and subsequent death was observed. A small dog placed in a temperature of 55° expired at 8 minutes, and so on. Again, another series of results were obtained when the head of the victim was kept outside the stove, while its body was baked or boiled. "The animals" (Bernard notes, page 356) "exhibit a series of symptoms always the same and characteristic. At first the creature is a little agitated. Soon the respiration and circulation are quickened. The animal opens its mouth and breathes hard. Soon it becomes impossible to count its pantings; at last it falls into convulsions, and dies generally in uttering a cry."

"In a subsequent table Bernard gives the particulars of the deaths in this apparatus of seventeen dogs and of numerous rabbits and pigeons; and then proceeds in the next lecture to show his audience the diagram of another and more elaborate stove, in which many other series of animals were sacrificed."

"Under the heading of 'Dogs,' Claude Bernard tells us that 'By reason of their docility dogs generally allow themselves to be caught without resistance. But when they are dogs which have strayed and been brought to the laboratory, they are either intimidated, as in the case of sheep-dogs and similar species, or they are enraged, defiant, and standing on the defensive, if they belong to the bulldog kind. With such animals certain precautions are necessary to secure them.'

"But if the animal by reason of his strength and fury cannot be secured, there is still one extreme method which always succeeds. We have only to throw a running knot over the dog's neck, either directly or by the aid of a long pole, and then draw it tight either round the leg of a table or by hanging it over a door until it be half strangled.

"In this way the half-asphyxiated animal falls into a state of helplessness and complete insensibility, and we must then muzzle him rapidly and tie his forepaws, with which he will try to get the muzzle off again. The running knot is then loosened and the muzzled and garroted animal recovers in a few minutes" (page 103).

Under the head of "Cats" we are told that "Cats are more terrible than dogs, inasmuch as they are armed with teeth and claws, while their suppleness and agility make it more difficult to secure them. It is, moreover, almost impossible to master an enraged cat, which springs like a tiger and tears everything he can get his claws upon."

"Muzzling a cat is by no means a simple operation, and for that reason Walter used to sew the lips together instead."

"The position of vivisection as a method of scientific research stands alone amongst the infinite variety of roads for the discovery of Nature's secrets, as being open to strong *prima facie* objection.

"No one can urge the slightest ground of objection against the astronomer, the chemist, the electrician or the geologist in their ways of working; and the great commendation of all other workers is the comparative certainty of their results. But for the physiologist working upon a living animal there are the two strong objections: that he is violating a strong and widespread public sentiment, and that he tabulates results of the most uncertain, and often quite contradictory, kind."—LAWSON TAIT, F.R.C.S.



No. 5. From De Graaf.

"To stop the cries of the animals without hindering respiration, the windpipe is first dissected out and then a hole made into it. It is then raised up and a large nail is passed in across it behind, so as to prevent the blood from running into the respiratory tract." "Many other physiologists have tried, like De Graaf, to stifle the cries of the animals in order to avoid the complaints of persons living in the neighborhood of laboratories. Dupuytren used to cut the recurrent laryngeal nerves so as to render the animal dumb, and I have often done the same operation for the same purpose, only that I operated by the subcutaneous method by a process I shall describe elsewhere."—*La Physiologie Opératoire*.

"Vivisection is, to my mind, a desecration of the highest objects to which the scientific mind can aspire, to the lowest and most barren modes of inquiry."—GEORGE MACILWAIN, F.R.C.S.



"Catheterism of the heart and the two vena cavae from the jugular vein.—The experiment here represented is for the purpose of obtaining blood from the sub-hepatic veins. For this purpose, the operator introduces his forefinger through a small opening made in the abdominal walls, and compresses with it the vena cava inferior below the liver, so that that vein receives blood only through the sub-hepatic veins. He may also, as shown in the figure, take the precaution of slightly raising the anterior border of the liver by means of a hooked instrument."

"Of all those experiments none are entered into at greater length, or so much excite a thrill of horror within us, as those under the head of 'Catheterism of the blood vessels,' which show how long flexible tubes are inserted at some convenient part of a superficial blood vessel, and then pushed along into the different parts of the heart and deeper blood vessels. Blood may thus be obtained from a given part for analysis; or the temperature may be ascertained in such otherwise inaccessible regions. In these experiments there is no pretense of giving anæsthetics; and as a matter of fact as well as logic none are given, for they would greatly interfere with the results when a careful analysis is to be made of the blood so obtained from special regions, or when it is a question of the temperature which normally exists there."

“Whether vivisection is conducive to science, or the reverse, there is one great preliminary consideration: on what authority of Scripture, or any other form of revelation, do they (the vivisectors) rest their right to subject God’s creatures to such unspeakable sufferings?”—SPEECH OF LORD SHAFTESBURY.



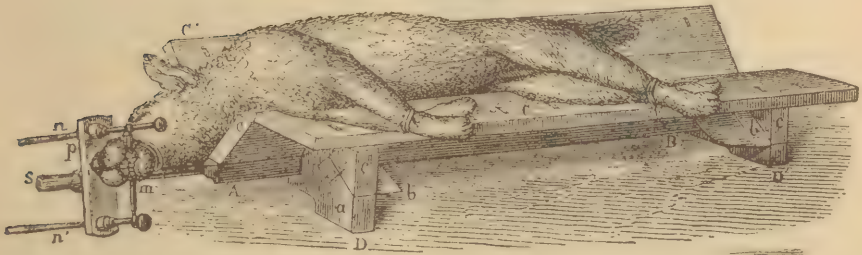
“Simultaneous catheterism of the great arteries and veins (*venæ cavae* and *aorta*) from the right femoral artery and vein by means of sounds containing long thermo-electric needles.—General conditions of the experiment: On the left of the animal, fixed in the trough, are represented the electric commutator and the galvanometer, the deviation in which indicates the difference of temperature of the surrounding fluids (arterial and venous blood) in which the thermo-electric sounds are placed.

“To the above description we may add that the jugular vein in the neck of the bound-down and muzzled animal has first to be carefully dissected

out and opened into, and, through the opening thus made, the bent tube or catheter has been inserted and pushed down through the heart into the great vein which brings the blood from the liver and hinder part of the body.

"It may be supposed that such elaborate apparatus and continually repeated vivisection have completely settled the question as to whether the arterial blood or the venous blood was hottest, if indeed the question was worth settling. That this is far from being the case we have the evidence of Bernard before us at page 462, where he says: 'The question of the localization of the source of animal heat ought to be settled by the simple experiment of testing whether arterial or venous blood is hottest. Well, nothing is more difficult to settle than this question. After more than half a century of experiments physiologists have been unable to come to any agreement upon it. Some have declared that arterial blood was hotter than venous blood. Others, on the contrary (and I am one of these), have found venous blood to be hotter than arterial blood; while a third category of experimenters, who do not believe in the fixity of the phenomena which have their seats in the animal economy, declare that sometimes the arterial blood is hottest and sometimes the venous blood.'

"The illustrations on pages 15 and 16, among many others, sufficiently show the horrible conditions in which the poor animals are placed when subjected to such experiments, and, instead of repeating all the steps to be taken and the precautions necessary, it may prove quite sufficient to reproduce a literal translation of the descriptive text accompanying each of the woodcuts."



From *La Physiologie Opératoire*.—Claude Bernard.

"It is very certain that the status of the profession may be lowered by being associated in the public mind with vivisection. There are already signs of this, and many medical men would rejoice to see their profession delivered from the opprobrium that has come upon it in consequence of this practice."—JAMES MACAULEY, M.D., F.R.C.S., Edinburgh.



"Let us come," says Paul Bert in his large book on *La Pression Barométrique*, p. 800, "to the description of the convulsive attack (produced by placing the victim for hours under compressed oxygen). It is really curious and frightful. (*effrayante*.)

"Let us take a case of medium intensity. When the animal is taken out of the machine it is generally in full tonic convulsions. The four paws are stiffened, the trunk is recurved backward, the eyes are starting from the head, the jaws clinched. Soon there is a sort of loosening to which succeeds a new crisis of stiffenings with clonic convulsions, resembling at once a crisis of strychnine poisoning, and an attack of tetanus. . . . Sensibility is preserved.

"In lighter cases, instead of attacks so violent as this, one may lift the animal by one paw like a piece of wood, as figure 61 shows. We observe disordered movements and local convulsions," etc.

"Finally, as regards anæsthetics, it is needful that the reader should dispel from his mind all illusion on the subject. No defence of Vivisection is so frequently offered and so generally accepted as the assertion that, in the vast majority of experiments, the animals are rendered wholly insensible to pain by means of anæsthetics. Persons who shrink from the miserable subject naturally seize on this assurance with relief, and thenceforth turn a deaf ear to the advocates of the suppression of the practice. What is the truth of the case?

"There are to be considered: 1st. Real anæsthetics (chloroform, ether, nitrous oxide, etc.). 2d. Narcotics (opium, chloral, etc.). 3d. Mock anæsthetics (Curare). * * *

"Of the third alternative, the MOCK ANÆSTHETIC, Curare. Here again Dr. Hoggan bears testimony:—

"If there be anything reliable in the results obtained by experimental physiology, it is the ingeniously ascertained effects of Curare. Could these now be disproved, it would establish the truth of the sneer so often heard, 'that Vivisection only requires to prove a thing, in order that fresh hecatombs of animals be tortured to disprove it.'

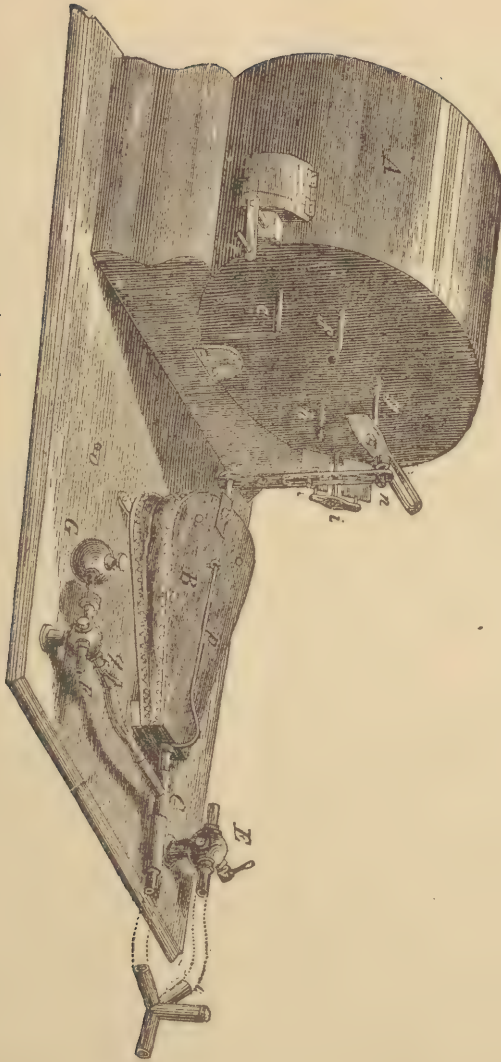
"Claude Bernard, the greatest authority upon, as he is the greatest discoverer of, the effects of Curare, says of it in *Revue Scientifique* for 1871-2, p. 892: 'Curare acting on the nervous system only suppresses the action of the motor nerves, leaving sensation intact. Curare is not an anæsthetic.' Vol. vi, p. 591: 'Curare renders all movement impossible, but it does not hinder the animal from suffering and from being conscious of pain.' These opinions of his are to be found repeated twenty times in the same work, in which he also mentions that they were proved on a human patient, operated upon under the influence of Curare, who was quite sensible throughout, and suffering frightful pain. Even in his latest remarks on the same subject (vol. 1874-75, p. 1117) he refers to experiments where the patients on their recovery had been able to relate 'that during paralysis they had been fully aware of their existence, and of all that happened around them.' Vulpian also, the next best authority, says in the latest work: '*Leçons sur l'appareil locomoteur*,' Paris, 1875, p. 660: 'Curare does not act on the sensory nerves, or, at least, does not abolish their function.' "

"Again, Claude Bernard, in his classic paper 'On Curare,' in the *Revue de Deux Mondes* for September, 1861, after quoting the opinion of travelers, and more especially of Waterton, says (p. 173):—

"Thus all their descriptions offer us a pleasant and tranquil picture of death by Curare. A gentle sleep seems to occupy the transition from life to death. But it is nothing of the sort; the external appearances are deceitful. In this paper it will be our duty to point out how much we may be in error relative to the interpretation of natural phenomena where science has not taught us the

cause and unveiled the mechanism. If, in fact, we pursue the essential part of our subject by means of experiments into the organic analysis of vital extinction, we discover that this death, which appears to steal on in so gentle a manner and so exempt from pain, is, on the contrary, accompanied by the most atrocious sufferings that the imagination of man can conceive (and *ante*, p. 162). In this motionless body, behind that glazing eye, and with all the appearance of death, sensitiveness and intelligence persist in their entirety. The corpse before us hears and distinguishes all that is done around it. It suffers when pinched or irritated; in a word, it has still consciousness and volition, but it has lost the instruments which serve to manifest them."

"We next reach one of the many instruments in use (this is Schwann's) for sustaining Artificial Respiration. It is to be understood that when an animal is curarized the muscles are so completely paralyzed that it ceases to breathe, and would immediately die were not artificial breathing kept up by pumping air into the lungs. This is sometimes done by hand, but in large laboratories it is customary to keep a water-engine or steam-engine at work for the purpose. In Ludwig's laboratory it has been stated that the engine in question never ceases playing day or night, sustaining life in the dogs and other animals extended on the vivisection tables around."



Instrument for producing artificial respiration.—From Bernard's *Physiologie Operatoire*.

DOES VIVISECTION PAY?

BY

ALBERT LEFFINGWELL, M.D.

EXTRACT.

Not long ago, in a certain medical college in the State of New York, I saw what Doctor Sharpey, for thirty years the professor of physiology in the University Medical College, London, once characterized by antithesis as "Magendie's *in-famous* experiment," it having been first performed by that eminent physiologist. It was designed to prove that the stomach, although supplied with muscular coats, is, during the act of vomiting, for the most part passive. * * Long before the conclusion of the experiment the animal became conscious, and its cries of suffering were exceedingly painful to hear. Now, granting that this experiment impressed an abstract scientific fact upon the memories of all who saw it, nevertheless it remains significantly true that the fact thus demonstrated had no conceivable relation to the treatment of disease. It is not to-day regarded as conclusive of the theory which, after nearly two hundred repetitions of his experiment, was doubtless considered by Magendie as established beyond question. Doctor Sharpey, a strong advocate of vivisection, by the way, condemned it as a perfectly unjustifiable experiment, since, "besides its atrocity, it was really purposeless." Was this repetition of the experiment which I have described worth its cost? Was the gain worth the pain? * *

Every medical student in New York knows that experiments involving pain are repeatedly performed to illustrate teaching. It is no secret; one need not go beyond the frank admissions of our later textbooks on physiology for abundant proof, not only of this, but of the extent to which experimentation is now carried in this country. "We have long been in the habit, in class demonstrations, of removing the optic lobe on one side from a pigeon," says Professor Flint, of Bellevue Hospital Medical College, in his excellent work on Physiology.* "The experiment of dividing the sympathetic in the neck, especially in rabbits, is so easily performed that the phenomena observed by Bernard and Brown-Sequard have been repeatedly verified. *We have often done this in class demonstrations.*"† "The cerebral lobes were removed from a young pigeon in the usual way, an operation * * *which we practice yearly as a class demonstration.*"‡ Claude Bernard was the first to succeed in following the spinal accessory nerve back to the jugular foramen, seizing it here with a strong pair of forceps, and drawing it out by the roots. This experiment is practiced in our own country. "We have found this result (loss of voice) to follow in the cat after the spinal accessory nerves have been torn out by the roots," says Professor John C. Dalton, in his treatise on Human Physiology.§ "This operation is difficult," writes Professor Flint, "but we have several times performed it with entire success;"|| and his assistant at Bellevue Medical College has succeeded "in extirpating these nerves for class demonstrations."

* A Text-book of Human Physiology, designed for the use of Practitioners and Students of Medicine, by Austin Flint, Jr., M.D. D. Appleton & Co. New York: 1876 (page 722).

† Page 738.

‡ Page 585.

§ Page 489.

|| Page 629.

In withdrawal of blood from the hepatic veins of a dog, "avoiding the administration of an anæsthetic" is one of the steps recommended.* The curious experiment of Bernard, in which artificial diabetes is produced by irritating the floor of the fourth ventricle of the brain, is carefully described, and illustrations afforded both of the instrument and the animal undergoing the operation.

There is one experiment in regard to which the severe characterization of English scientists is especially applicable, from the pain necessarily attending it. Numerous investigators have long established the fact that the great sensory nerve of the head and face is endowed with an exquisite degree of sensibility. More than half a century ago, both Magendie and Sir Charles Bell pointed out that merely exposing and touching this fifth nerve gave signs of most acute pain. "All who have divided this root in living animals must have recognized, not only that it is sensitive, but that its sensibility is far more acute than that of any other nervous trunk in the body.† "The fifth pair," says Professor John C. Dalton, "is the most acutely sensitive nerve in the whole body. Its irritation by mechanical means *always causes intense pain*, and even though the animal be nearly unconscious from the influence of ether, any severe injury to its large root is almost invariably followed by cries."‡ Testimony on this point is uniform and abundant. If science speaks anywhere with assurance, it is in regard to the properties of this nerve. Yet every year the experiment is repeated before medical classes, simply to demonstrate accepted facts. "This is an operation," says Professor Flint, referring to the division of this nerve, "that we have frequently performed with success." He adds that "it is difficult from the fact that one is working in the dark, and it requires a certain amount of dexterity, *to be acquired only by practice.*" * * * This is one of Magendie's celebrated experiments; perhaps the reader fancies that in its modern repetitions the animal suffers nothing, being rendered insensible by anæsthetics? "*It is much more satisfactory to divide the nerve without etherizing the animal, as the evidence of pain is an important guide in this delicate operation.*" Anæsthetics, however, are sometimes used, but not so as wholly to overcome the pain.

Testimony of individuals, indicating the extent to which vivisection is at present practiced in this State might be given; but it seems better to submit proof within the reach of every reader, and the accuracy of which is beyond cavil. No legal restrictions whatever exist, preventing the performance of any experiment desired. Indeed, I think it may safely be asserted that, in the city of New York, in a single medical school, more pain is inflicted upon living animals as a means of teaching well-known facts, than is permitted to be done for the same purpose in all the medical schools of Great Britain and Ireland. And *cui bono?* "I can truly say," writes a physician who has seen all these experiments, "that not only have I never seen any results at all commensurate with the suffering inflicted, but I cannot recall a single experiment which, in the slightest degree, has increased my ability to relieve pain, or in any way fitted me to cope better with disease."

—Scribner's Magazine, July, 1880.

* Flint: "Text-book of Human Physiology" (page 463).

† Page 641.

‡ Dalton's "Human Physiology," (page 466).

